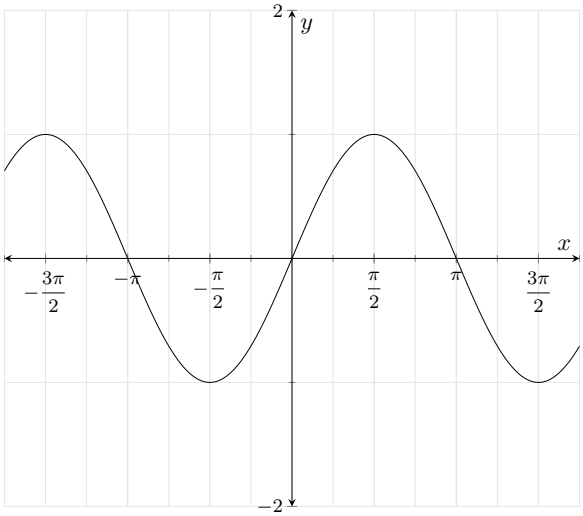
Exercise 1 *Let $f(x) = \sin(x)$. The following information about the sine function may be helpful.*

$f(x) = \sin(x)$



Important Values of $f(x) = \sin(x)$	
x	$f(x)$
$-\pi$	0
$\frac{-\pi}{2}$	-1
0	0
$\frac{\pi}{2}$	1
π	0
$\frac{3\pi}{2}$	-1
2π	0

(a) *Compute $AV_{\left[-\pi, \frac{3\pi}{2}\right]}$. Give an exact answer.*

$AV_{\left[-\pi, \frac{3\pi}{2}\right]} = \boxed{-\frac{2}{5\pi}}$.

(b) *Based on your answer above, the sine function is*

Multiple Choice:

(i) *increasing on the interval* $\left[-\pi, \frac{3\pi}{2}\right]$.

(ii) *decreasing on the interval* $\left[-\pi, \frac{3\pi}{2}\right]$.

(iii) *constant on the interval* $\left[-\pi, \frac{3\pi}{2}\right]$.

(iv) *increasing on average on the interval* $\left[-\pi, \frac{3\pi}{2}\right]$.

(v) *decreasing on average on the interval* $\left[-\pi, \frac{3\pi}{2}\right]$. ✓

(vi) *constant on average on the interval* $\left[-\pi, \frac{3\pi}{2}\right]$.

(c) *Compute* $AV_{[0,2\pi]}$.

$AV_{[0,2\pi]} = \boxed{0}$.

(d) *Based on your answer above, the sine function is*

Multiple Choice:

(i) *increasing on the interval* $[0, 2\pi]$.

(ii) *decreasing on the interval* $[0, 2\pi]$.

(iii) *constant on the interval* $[0, 2\pi]$.

(iv) *increasing on average on the interval* $[0, 2\pi]$.

(v) *decreasing on average on the interval* $[0, 2\pi]$.

(vi) *constant on average on the interval* $[0, 2\pi]$. ✓